

L.068.510



# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### A Device for Delivering Reconstituted Milk in Measured Quantity

I, CARLO ERNESTO VALENTE, an Italian citizen, of Via G. Ventura, 15 Milan, Italy, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention concerns a device for delivering liquid milk in measured quantity from powdered milk. Such a device is useful especially but not exclusively for subsequently mixing of the milk with coffee in the preparation of a beverage.

Attempts have been made to provide a device for delivering powdered milk but these have been found to have disadvantages which have impeded or restricted their adoption. For example, use has been made, for the delivery and measuring of powdered milk, of an Archimedean screw, but apart from the inaccuracy of measurement, there is the disadvantage that the milk powder (which must necessarily remain in the spirals of the screw) owing to its extremely hygroscopic nature, coagulates and thus prevents operation of the device.

It is the object of the present invention to provide a device which will overcome or at least substantially overcome the disadvantages mentioned.

According to the present invention a device for delivering reconstituted milk in measured quantity for mixing with, for example coffee, for a beverage, is characterised in that there is provided means for the volumetric measuring of powdered milk, a pivotable receptacle capable of being brought into a position adapted to receive a pre-determined quantity of hot water and subsequently the measured quantity of powdered milk for reconstitution, said receptacle being capable of being brought into an inclined position, so that it pours its contents into a means arranged to convey them to a beverage receptacle, and means for synchronising the various movements.

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The invention will be described further, by way of example with reference to the accompanying drawings in which:—

Fig. 1 illustrates a partly in section device according to the invention,

Fig. 2 illustrates the device in the position in which it is used to measure a quantity of powdered milk,

Fig. 3 shows the device in a position identical to that of Fig. 2 and,

Fig. 4 shows the device in a position in which it dispenses dissolved powdered milk.

Referring now to the drawings Fig. 1 shows a supporting frame for the device, the frame is provided with a disc-shaped block 3 for supporting a receptacle 2 of for example perspex, intended to receive the powdered milk. A chamber 4 of cylindrical form and open above and below, is cut in the block 3. The volume of the chamber 4 corresponds to a "dose" of milk powder to be measured for dispensing in liquid form. The chamber 4 can be closed above and below respectively by means of a pair of shaped covers or lids 5 and 6 which are supported eccentrically by a shaft 7 mounted in the frame 1 and conveniently driven by a small electric motor, so that it rotates in the direction of the arrow shown in Fig. 2. The two lids 5 and 6 are so designed and positioned on the shaft 7 that whilst they close both the top and bottom of the chamber 4 in the position shown in Fig. 1, after a suitable rotation of the shaft 7 to the position shown in Fig. 2, the lid 5 leaves the top of the chamber 4 open, thus allowing the powdered milk contained in the receptacle 2 to fall and fill it, whilst the lid 6 still maintains the bottom of the chamber closed.

Below the said chamber 4 is a spoon-like receiver 8 which is pivotally mounted on a horizontal pivot 9 supported by the frame 1 of the appliance. This spoon 8 when operated by a cam (not shown) mounted on the shaft

7 moves from the position shown in Fig. 1, in which the appliance is inoperative as a result of the movement of the shaft 7 through a pre-determined angle, to the position shown in Fig. 2, in which it is capable of receiving a suitable quantity of water from a supply nozzle 10, which is controlled by a solenoid valve (not shown) operated by another cam (not shown) mounted on the shaft 7.

As a result of the movement of the shaft 7 through a further angle (see Fig. 3) the lid 5 again closes the top of the chamber 4, whilst the lid 6 leaves the bottom to open it, thus allowing the "dose" of powdered milk contained in the chamber 4 to fall into the spoon 8 below it and to dissolve in the water which has previously been fed to the spoon 8. At this stage the water supply has been cut off. Finally the last movement of the shaft 7 (see Fig. 4) brings the lid 6 also into the position shown in Fig. 1 and at the same time moves the spoon 8 into the Fig. 1 position so that it pours the liquid milk into the funnel 11 below it, which conveys it to the cup containing the coffee in beverage form.

At the same time the nozzle 10 has again delivered water to the spoon in order to wash it out, and this washing-out water, the quantity of which is measured (because the solenoid valve controlling the nozzle 10 closes after a certain time) will dilute the coffee a little more.

The nozzle is fed from a small boiler (not shown) which supplies the water at the temperature required.

The solenoid valve controlling the nozzle 8 is at the outlet from the boiler and is fol-

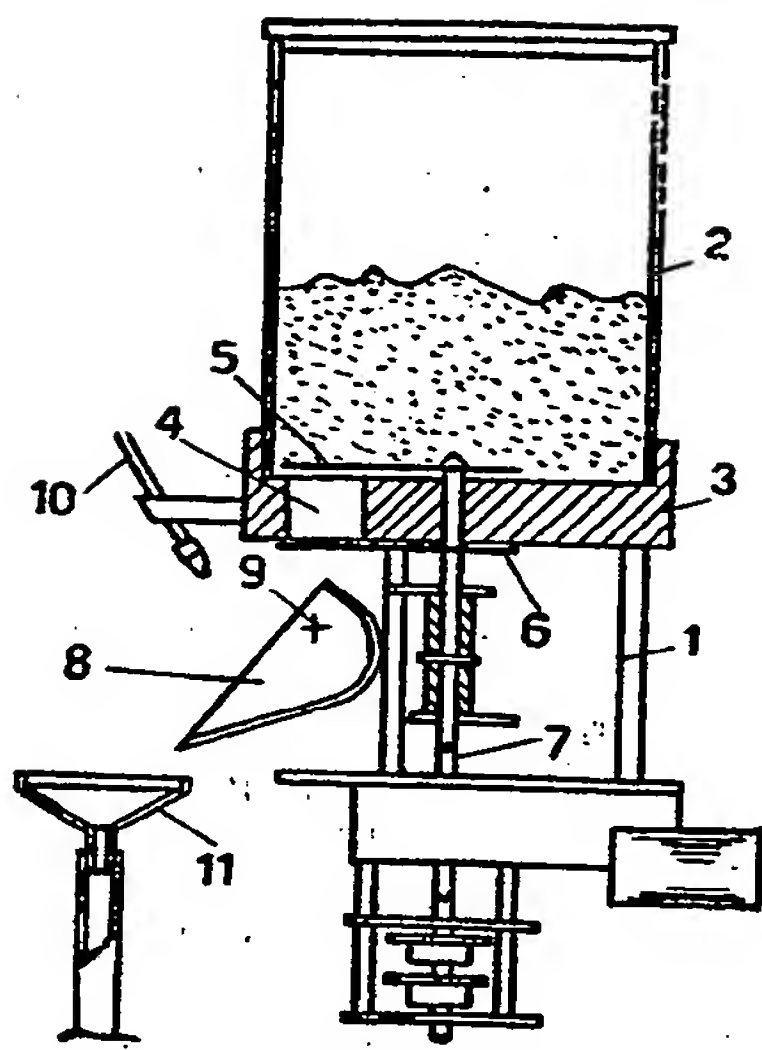
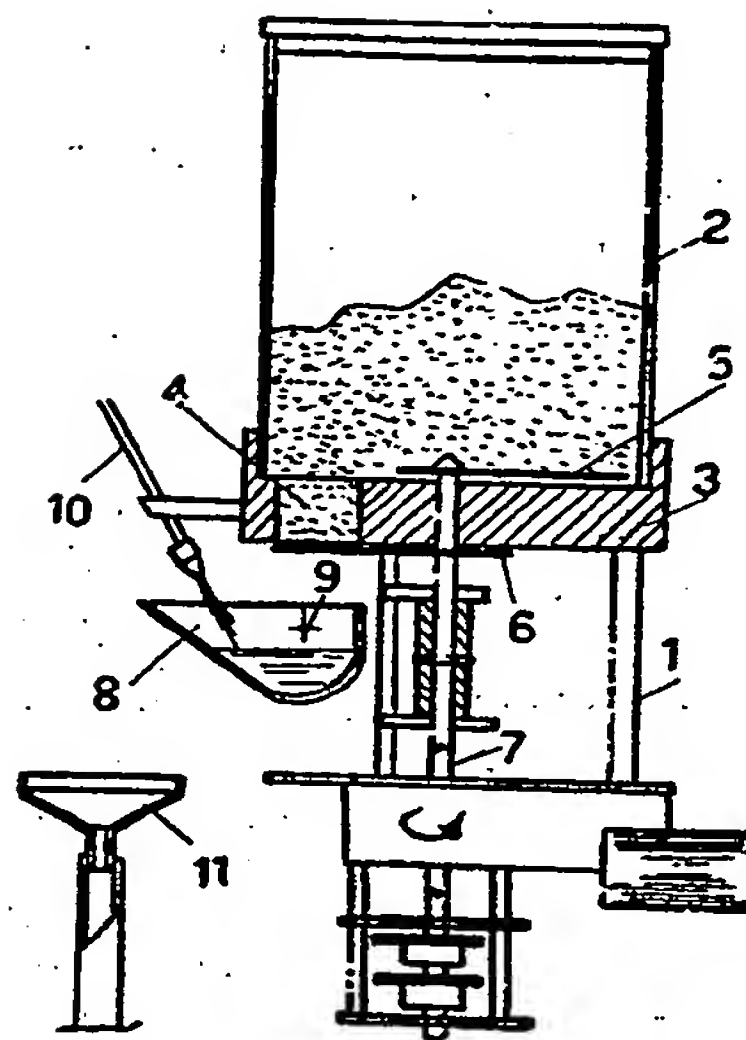
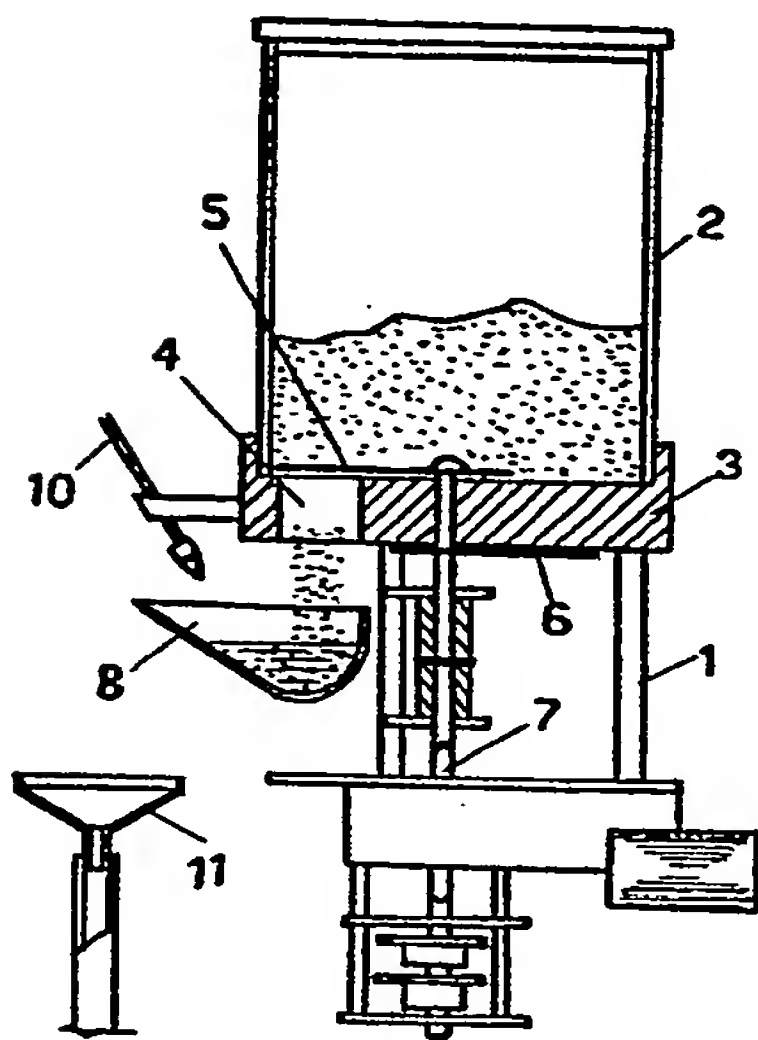
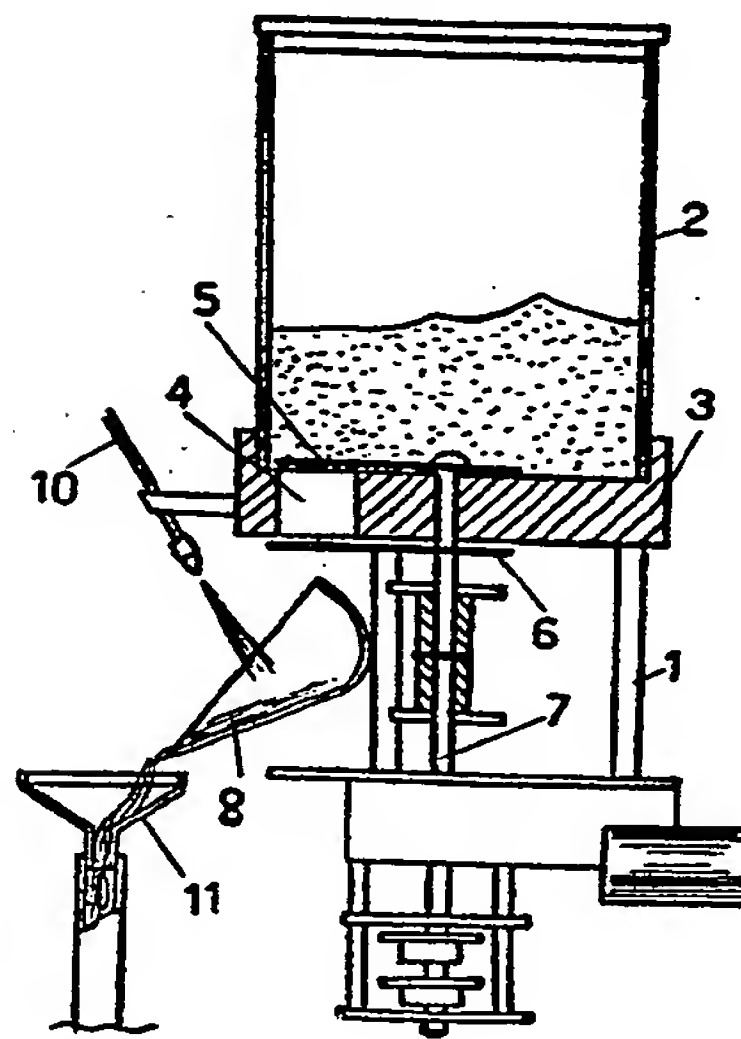
lowed by a series of filters and chokes or throttles.

Known means, which are therefore not described, are provided to synchronise the various movements.

#### WHAT I CLAIM IS:—

1. A device for delivering reconstituted milk in measured quantity for mixing with for example coffee for a beverage, characterised in that there is provided means for the volumetric measuring of powdered milk, a pivotable receptacle capable of being brought into a position adapted to receive a pre-determined quantity of hot water and subsequently the measured quantity of powdered milk for reconstitution, said receptacle being capable of being brought into an inclined position, so that it pours its contents into a means arranged to convey them to a beverage receptacle and means for synchronising the various movements.
2. A device according to claim 1 characterised in that when in the inclined position the receptacle is fed by a jet of hot water to rinse the receptacle.
3. A device as claimed in the preceding claims characterised in that the swivelling receptacle is roughly in the shape of a spoon.
4. A device for delivering reconstituted milk in measured quantities substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

For the applicant,  
**WILSON, GUNN & ELLIS,**  
 Chartered Patent Agents,  
 57 Market Street, Manchester, 1.

FIG. 1FIG. 2FIG. 3FIG. 4